

Table S1. Sensitivity of ring-necked pheasant and Japanese quail to TCDD, PCB 126, PCB 77, PCB 105-P, PCB 105-RG, PCB 118-P and PCB 118-RG relative to the chicken. EC₅₀-based relative sensitivity values (ReS) obtained from EROD activity, CYP1A4/5 mRNA expression and luciferase reporter gene (LRG) activity are presented.

Compound	Species	ReS _{EC50}			
		EROD	CYP1A4	CYP1A5	LRG*
TCDD	Chicken	1.00 ^a	1.00 ^a	1.00 ^a	1.00 ^a
TCDD	Ring-necked pheasant	0.59 ^a			0.086 ^b
TCDD	Japanese quail	0.21 ^b	0.11 ^b	0.026 ^b	0.0046 ^c
PCB 126	Chicken	1.00 ^a	1.00 ^a	1.00 ^a	1.00 ^a
PCB 126	Ring-necked pheasant	0.10 ^b			0.048 ^b
PCB 126	Japanese quail	0.011 ^c	0.0022 ^b	0.0024 ^b	0.011 ^b
PCB 77	Chicken	1.00 ^a	1.00	1.00	1.00
PCB 77	Ring-necked pheasant	0.10 ^b			NA
PCB 77	Japanese quail	0.034 ^c	NA	NA	NA
PCB 105-P	Chicken	1.00 ^a	1.00 ^a	1.00 ^a	NA
PCB 105-P	Japanese quail	2.60 ^a	143 ^a	118 ^a	<0.26
PCB 105-RG	Chicken	1.00 ^a	1.00 ^a	1.00 ^a	NA
PCB 105-RG	Ring-necked pheasant	0.87 ^a			<0.32
PCB 105-RG	Japanese quail	9.12 ^b	21.8 ^b	42.2 ^b	<0.32
PCB 118-P	Chicken	1.00 ^a	1.00 ^a	1.00 ^a	NA
PCB 118-P	Japanese quail	2.52 ^b	2.07 ^a	2.43 ^b	NA
PCB 118-RG	Chicken	1.00 ^a	1.00 ^a	1.00 ^a	NA
PCB 118-RG	Ring-necked pheasant	0.81 ^a			NA
PCB 118-RG	Japanese quail	2.60 ^b	1.61 ^a	3.93 ^a	NA

Superscript letters indicate significant differences between EC₅₀ values among species ($p < 0.05$). If two values for a given species are significantly different, those values display different superscript letters.

* LRG assay ReS values from Manning *et al.* (2012).

Table S2. *In ovo* LD₅₀ values for TCDD, PCB 126, PCB 77, PCB 105 and PCB 118 in the chicken, ring-necked pheasant and Japanese quail.

Species	Compound	LD ₅₀		Reference
		(ng/g egg)	(pmol/g egg)	
chicken	TCDD	0.21	0.65	(Cohen-Barnhouse et al., 2011)
	PCB 126	1.1 ^a	3.4	(Head et al., 2008)
	PCB 77	8.6	29	(Brunstrom and Andersson, 1988)
	PCB 105	2200	6700	(Brunstrom, 1990)
	PCB 118	8000 ^b	25000	(Brunstrom, 1990)
ring-necked pheasant	TCDD	1.2	3.5	(Cohen-Barnhouse et al., 2011)
Japanese quail	TCDD	9.7	30	(Cohen-Barnhouse et al., 2011)

^a LD₅₀ calculated based on a review of several egg injection studies (Head et al., 2008).

^b LD₅₀ taken from Giesy et al., (2006).

Table S3. Equations, R² and *p* values associated with linear regression analyses between luciferase reporter gene activity and CYP1A induction measured as EROD activity or CYP1A4/5 mRNA expression in avian hepatocyte cultures.

Assay	Endpoint	Regression equation	R ²	<i>p</i> value
EROD	EC ₅₀	logEC ₅₀ = 1.257logEC ₅₀ + 2.303	0.81	0.0061
	EC _{threshold}	logEC _{threshold} = 0.980logEC _{threshold} + 2.014	0.86	<0.0001
	TCDD ₂₀ *	logTCDD ₂₀ = 0.993logTCDD ₂₀ + 1.984	0.92	<0.0001
CYP1A4	EC ₅₀	logEC ₅₀ = 0.775logEC ₅₀ + 1.344	0.74	0.0622
	EC _{threshold}	logEC _{threshold} = 0.914logEC _{threshold} + 1.819	0.76	0.0002
	TCDD ₂₀ *	logTCDD ₂₀ = 0.928logTCDD ₂₀ - 1.253	0.82	0.0050
CYP1A5	EC ₅₀	logEC ₅₀ = 0.749logEC ₅₀ + 1.586	0.84	0.0285
	EC _{threshold}	logEC _{threshold} = 0.848logEC _{threshold} + 1.925	0.62	0.0023
	TCDD ₂₀ *	logTCDD ₂₀ = 0.858logTCDD ₂₀ + 1.712	0.80	0.0068

*TCDD₂₀ represents the TCDD or PCB concentration that elicited a response equal to 20% of the TCDD maximal response

Table S4. Equations, R² and *p* values associated with linear regression analyses between *in ovo* LD₅₀ values and CYP1A induction measured as EROD activity or CYP1A4/5 mRNA expression in avian hepatocyte cultures.

Assay	Endpoint	Regression equation	R ²	<i>p</i> value
EROD	EC ₅₀	logLD ₅₀ = 1.483logEC ₅₀ + 2.429	0.98	<0.0001
	EC _{threshold}	logLD ₅₀ = 1.129logEC _{threshold} + 3.283	0.91	0.0009
	TCDD ₂₀ *	logLD ₅₀ = 1.368logTCDD ₂₀ + 3.228	0.95	0.0011
CYP1A4	EC ₅₀	logLD ₅₀ = 0.894logEC ₅₀ + 1.426	0.76	0.0229
	EC _{threshold}	logLD ₅₀ = 1.012logEC _{threshold} + 2.944	0.81	0.0152
	TCDD ₂₀ *	logLD ₅₀ = 0.851logTCDD ₂₀ + 1.921	0.79	0.0186
CYP1A5	EC ₅₀	logLD ₅₀ = 0.861logEC ₅₀ + 1.700	0.81	0.0151
	EC _{threshold}	logLD ₅₀ = 1.013logEC _{threshold} + 3.106	0.58	0.0766
	TCDD ₂₀ *	logLD ₅₀ = 0.927logTCDD ₂₀ + 2.427	0.79	0.0171

*TCDD₂₀ represents the TCDD or PCB concentration that elicited a response equal to 20% of the TCDD maximal response

References

1. Brunstrom, B. (1990). Mono-ortho-chlorinated chlorobiphenyls: toxicity and induction of 7-ethoxyresorufin O-deethylase (EROD) activity in chick embryos. *Archives of Toxicology* **64**, 188-192.
2. Brunstrom, B., and Andersson, L. (1988). Toxicity and 7-ethoxyresorufin O-deethylase-inducing potency of coplanar polychlorinated biphenyls (PCBs) in chick embryos. *Archives of Toxicology* **62**, 263-266.
3. Cohen-Barnhouse, A. M., Zwiernik, M. J., Link, J. E., Fitzgerald, S. D., Kennedy, S. W., Hervé, J. C., Giesy, J. P., Wiseman, S., Yang, Y., Jones, P. D., Wan, Y., Collins, B., Newsted, J. L., Kay, D., and Bursian, S. J. (2011). Sensitivity of Japanese quail (*Coturnix japonica*), Common pheasant (*Phasianus colchicus*), and White Leghorn chicken (*Gallus gallus domesticus*) embryos to *in ovo* exposure to TCDD, PeCDF, and TCDF. *Toxicol.Sci.* **119**, 93-103.
4. Giesy, J. P., Kannan, K., Blankenship, A. L., Jones, P. D., and Newsted, J. L. (2006). Toxicology of PCBs and related compounds. In *Endocrine Disruption Biological Bases for Health Effects in Wildlife and Humans* (D. O. Norris, and J. A. Carr, Eds.), pp. 245-331. Oxford University Press, New York.
5. Head, J. A., Hahn, M. E., and Kennedy, S. W. (2008). Key amino acids in the aryl hydrocarbon receptor predict dioxin sensitivity in avian species. *Environ.Sci.Technol.* **42**, 7535-7541.
6. Manning, G. E., Farmahin, R., Crump, D., Jones, S. P., Klein, J., Konstantinov, A., Potter, D., and Kennedy, S. W. (2012). A luciferase reporter gene assay and aryl hydrocarbon receptor 1 genotype predict the LD₅₀ of polychlorinated biphenyls in avian species. *Toxicol.Appl.Pharmacol.* **263**, 390-401.